Memphis, Tennessee
RUSSWOOD BALL PARK FIRE

National Fire Coordination Study

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RUSSWOOD BALL PARK FIRE

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INTRODUCTION

Fire studies undertaken by the staff of the National Fire Coordination Study are designed to identify significant factors that are important to a more complete utilization of Federal, state, local, and private fire organizations in effective control of fires resulting from natural causes or from an enemy attack.

Peacetime fires are far from being representative of fires that might result from a nuclear attack but they nevertheless provide an actual experience that can be related, in a general way, to a projected wartime fire situation.

Preliminary work in the Analytical Phase of the NFCS has shown that when the population is adequately sheltered from fallout during a nuclear attack, fires occurring within the shelter, or moving toward the shelter from the outside, can become a serious threat to survival of shelter occupants. The presence of radioactive fallout may limit fire suppression efforts on the outside when a shelter facility is threatened by an uncontrolled fire. If dangerous levels of radioactivity are present, the safety of the sheltered people depends upon their ability to keep fire out of their shelter building.

Fire studies made earlier by the NFCS staff have supplied useful information concerning organized fire suppression, mutual aid, command, fire spread and similar elements of the fire job. Information is needed to specify the problem of defending shelters by the occupants and to identify equipment or protective measures that would enhance these defensive efforts. The Russwood Ball Park Fire was chosen for study because it had potential to supply the needed information.

OBJECTIVES

The objective of studying the Russwood Ball Park Fire is to identify the equipment, protective measures, training, organization or other actions that would improve the ability of sheltered survivors to defend their shelter from fire.

FIRE DESCRIPTION AND THREAT

The Russwood Fire started at 7:28 p.m. Easter Sunday, April 7, 1960.[1/] [2/] Ignition was at a point near the northwest corner of the Russwood Ball Park grandstand seats; and with the strong

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1/ Evacuation of Hospitals During Memphis Ball Park Fire, by Chief E. A. Hamilton, Memphis

2/ The Best in the Nation, by T. E. Michael, The Memphis Commercial Appeal Magazine, July 25, 1965.

northwest winds that were blowing, most of the bleachers and grandstands were in the path of the fire. The fire spread rapidly and the 4th alarm had been sounded only 8 minutes after arrival of the first units. The fire was developing so rapidly that many units were having difficulty finding a permanent site from which to make a stand. One pumper was damaged and some hose lines on the street were burned up when the fire reached Madison Street in front of the hospital with more intensity than expected.

Predominantly wooden construction of the grandstands contributed to the spread of the fire. Two additional factors also contributed materially to fire spread: (1) there was a large amount of debris in the stands from a recent ball game and (2) the stands had only recently been repainted.

It took only one hour and 24 minutes to control this fire and control was aided greatly by fuel reduction when the wooden portion of the grandstands were consumed by fire.

Water was adequate on the fire with an estimated 10,630 gallons/minute being used during peak activity. Off-duty firemen were used to man extra pumpers. Mutual aid response was not needed, and in fact normal arrangements between Memphis and suburban communities are non-existent.

As the fire developed, it was obvious that at least three of the hospital facilities in the medical center area would be threatened. (See Figure 1). The most severe threat was to the New Madison East Wing of the Baptist Hospital. This was a 12-story structure with two wings facing toward the advancing fire. The old Baptist Hospital just west of the new section, while not directly in line with the wind-driven fire, would also be threatened. The third major threat was to the 3-story maternity wing of the John Gaston Hospital just across a narrow street to the west of the fire. This building would be threatened mostly by radiated heat, rather than flying brands.

The decision was made to evacuate both the maternity wing of the John Gaston Hospital and the East Wing of the Baptist Hospital since they were both severely exposed to fire. Both hospitals had disaster plans in effect and their personnel had been trained in evacuation procedures and firefighting techniques. Fires broke out in the combustible window frames of the maternity wing but were controlled by the fire department and trained staff using 1 1/2 inch interior standpipe lines. As the East Wing of the Baptist Hospital began receiving more radiated and convective heat, the large plate glass windows were broken in the ground floor hospital lobby. Furniture, draperies and other combustibles

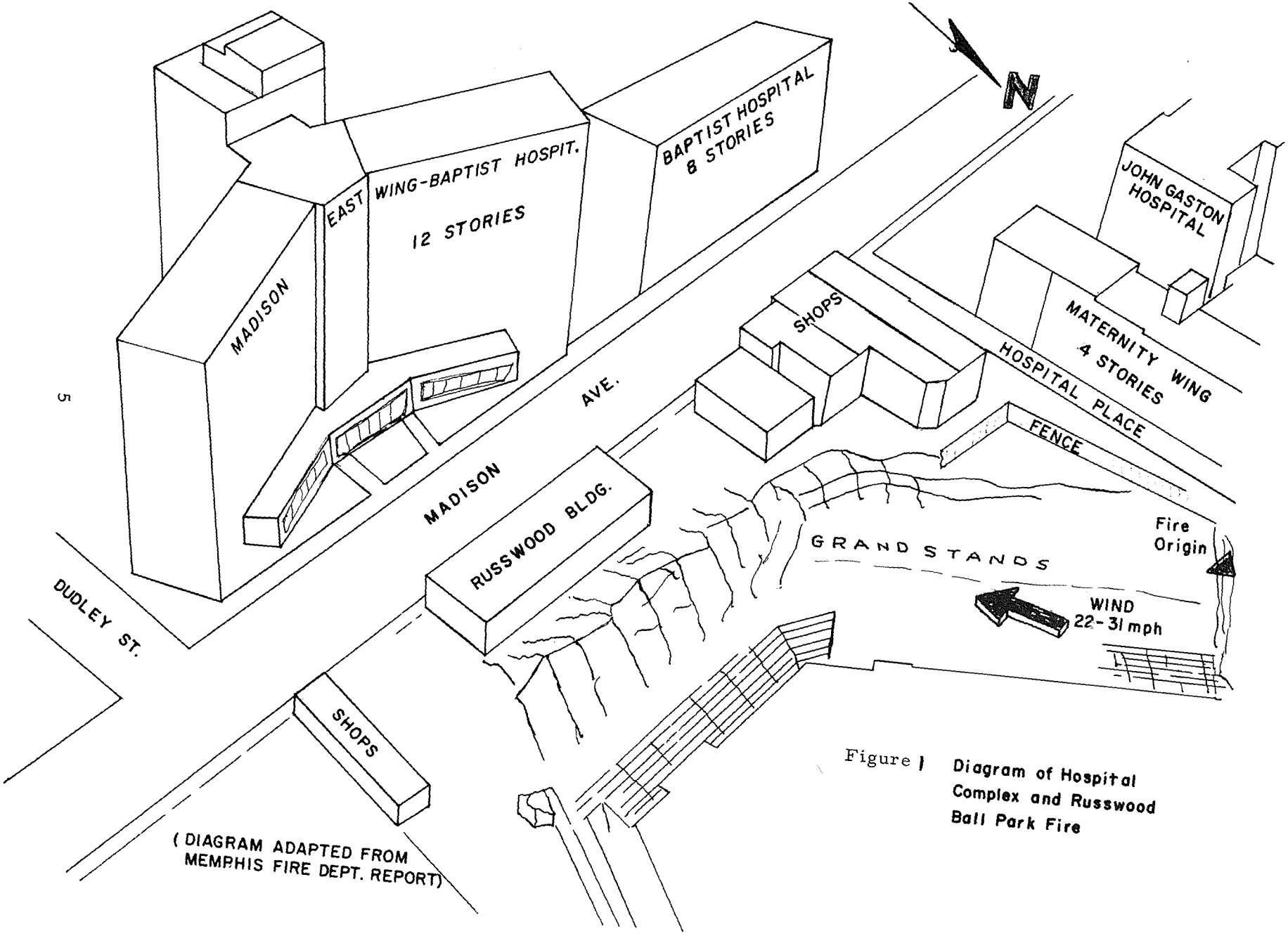

Figure 1 Diagram of Hospital Complex and Russwood Ball Park Fire

were ignited. The fires were extinguished by firemen and hospital staff using the standpipe lines in the building. The windows in the 12-story wings facing out toward the fire were aluminum frame, "thermo-pane" type. Exposed to the convected and radiated heat (See Figure 2), 651 of these windows cracked, but none of them failed completely and the fire didn't enter the building on any floor above the ground level. As an additional precaution, the drapes and flammable materials were removed from the exposed rooms and periodic checks were made on each floor to make sure that fires didn't start in any of the rooms.

Flying brands started some fires downwind, and a continuous patrol was maintained through the streets and on the roofs of buildings to prevent additional fires from developing.

EVACUATION

As mentioned earlier, both hospitals had disaster plans in effect. They had been assisted by the Fire Service in the training of their personnel for evacuation and firefighting. When the order was given to evacuate the areas threatened by fire, the movement was carried out by the hospital staff, leaving the firefighting personnel free to concentrate on protecting the building from fire. When the threat was over the trained hospital staff moved the patients back into the rooms and on the day following the fire the hospital facilities were back to normal and 145 new patients were admitted.

Figure 2. Strong northwest winds spread the fire toward the front of the east wing of the Baptist Hospital cracking windows and starting fires in the hospital lobby.

CONCLUSIONS

1. Effective training of hospital staff by the Memphis Fire Department personnel in mass evacuation and fire control, contributed materially to the successful handling of this disaster situation.

2. Buildings with exteriors of fire resistive materials may be successfully defended from within if adequate pre-planning is done.

3. Current disaster plans included measures to protect structures from fire from within; more attention should be given to protecting structures from fire moving into the area.

4. Aluminum frame, twin-paned windows were adequate in this case to prevent fires from starting around the windows, and from entering the building through broken windows.

5. Removal of drapes and bedding from the exposed rooms in the hospital probably prevented many fires from starting by radiated heat.

6. The use of standpipes for internal building fire control is the best approach if adequate water pressure can be maintained in the lines.

7. Gravity tanks on tall buildings would provide an emergency water source if normal line pressure is lost.

8. Hand fire extinguishers were used to help control the room fires in the maternity wing, but without the standpipe lines, control of the fire in the building would have been difficult.

RECOMMENDATIONS

These recommendations are especially significant to a program for increasing capabilities for defending fallout shelters from fire:

1. As part of the fire defense program train the staff of community institutions in evacuation and defense of their facilities and shelters from fire.

2. In disaster planning, consider alternatives for accomplishing specific goals in the event that usual operating procedures are interrupted, i. e., loss of water pressure or electricity.

3. Disaster plans for nuclear fires should include measures to protect structures both from without and within.

4. Chief E. A. Hamilton made a specific suggestion concerning construction of "fire-safe" buildings: That a great deal would be accomplished through the use of uniform building codes for the entire country designed to ensure more fire-safe construction.

5. Provide auxiliary water supplies for fire defense of key shelter buildings. Tanks atop the buildings to provide gravity flow appears to be one solution.

6. Reduce the vulnerability of shelter buildings to fire from the outside by (1) using fire-resistive paint on combustible window sills and (2) making wider use of non-combustible roofing.

7. Conduct feasibility studies of fire resistant characteristics of metal frame, twin-pane type windows.

8. Reduce fire vulnerability of shelter buildings on the inside by keeping combustibles away from buildings and patrolling within the building.

9. Make plans to utilize industrial and institutional fire brigades to supplement fire service and to assist in shelter fire protection during a nuclear emergency.